BUILDER™
Sustainment Management System

Technology

The BUILDER™ Sustainment Management System (SMS) is a MicroSoft® Windows® based software application developed by ERDC's Construction Engineering Research Laboratory (CERL) to help civil engineers, technicians, and managers decide when, where, and how to best maintain building infrastructure. BUILDER technologies and methods include a comprehensive inventory of building major components, including:

- photo imaging
- checklist-style, pen-based inspections
- condition indexes
- functionality ratings
- condition prediction capabilities
- revised remaining service lives based on condition
- seismic and other building compliance ratings
- budget planning procedures
- prioritized long-range work-planning procedures
- presentation graphics, and linkages to Autodesk, Inc.'s *AutoCad*®, Bentley Systems, Inc.'s *Microstation*, and other building drawings
- linkage to MAXIMO (asset management and maintenance software) and other Computerized Maintenance Management Software (CMMS)
- a built-in Geographical Information System (GIS) viewing capability
- an ability interface to an external GIS.

The BUILDER decision support tool allows users to manage buildings individually or in groups, enabling effective management of historic, housing, health/environment, and safety/code issues. Projects can be BUILDER-generated or initiated externally from customer requests.

Problem

The Army owns over 165,000 buildings, comprising 1.1 billion square feet, and spends about 55 percent of its installation real property maintenance funds on maintenance and repair (M&R) of these buildings. However, tight resources on funding and personnel have forced many installations to abandon inspection and preventative maintenance programs for critical building systems. Building managers fall into a largely reactionary mode, responding to unexpected component breakdowns and system failures at inopportune, expensive times. In addition, many buildings currently serve some mission function much different from the original design purpose. Consequently, building maintenance is not planned, programmed, or budgeted efficiently.

Expected Cost To Implement

BUILDER software (and technical assistance) is available by subscription from the University of Illinois at Urbana-Champaign (UIUC) Technical Assistance Center (TAC) at a fee (and annual renewal) of $950. First-time implementation of BUILDER entails some additional costs associated with the creation of the BUILDER database, which involves the collection of building inventory and inspection data, the gathering of unit cost information and the creation of M&R policies. These initial costs will vary from user to user. Users may also desire optional training and GIS coverage development, which may be scheduled through TAC (the listed "Distribution Source"). Current training course fees are $899/person.

Benefits/Savings   BUILDER provides managers responsible for the building assets with a support tool for sustainment, restoration, and modernization (SRM) decisions. The system gives functional managers and decisionmakers instant access to data about their building inventory, the current condition of individual buildings, a fact-based prediction of future condition, and current and potential regulatory compliance issues. BUILDER integrates information about condition, functionality, and remaining service life to develop short and long-range (multi-year) M&R work plans based on sound investment strategies, prioritization criteria, and budget constraints. The SMS consolidates a variety of building-related management issues into a single, proactive decision-support package that helps manage assets and allocate resources, lowers the cost of re-inspections, and provides meaningful SRM decision-support metrics.

Status   BUILDER version 2.2 was released early in 2004 and is available through the listed distribution source. A desktop version of the BUILDER program also includes IMPACT, a simulation engine to model the effects that funding, standards, and prioritization decisions have on facility condition. BUILDER 3.0, currently being beta-tested, is scheduled for completion in 2006. This version, which is being re-engineered as a web application, will run on both Oracle® and SQL Server®, and will include support for enterprise-wide application with a robust security model and multi-level organization support.

BUILDER 3.0 will more effectively manage vast and diverse building assets through a "knowledge-based" process that by automatically downloading real property data, then by modeling a more detailed system inventory to identify components and their key life-cycle attributes such as the age and material. The system uses this inventory to predict Condition Index (CI) measures for each component based on its expected stage in the life-cycle. Objective, repeatable inspections are then performed on various components to verify their condition with respect to the expected life-cycle deterioration. These "knowledge-based" inspections focus attention on the most critical components at the most appropriate time (to take action). The system tailors inspection schedules to unique asset management requirements, drastically reduces inspection costs, and ensures asset performance to meet mission needs. BUILDER can also be used to do functionality assessments to evaluate compliance and obsolescence issues, and user requirement changes. These functionality assessments are similar to condition assessments in that they are used to identify modernization requirements; together with condition assessments, they provide a total picture of needed facility investment requirements. These two new (patents applied for) BUILDER capabilities will provide a comprehensive picture of the overall performance of building assets and their key components.

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Distribution Sources   BUILDER may be purchased from: UIUC Technical Assistance Center, 302 East John Street, Suite 202, Champaign, IL 61820, Phone: 217-333-5414. Online purchase is available through URL:

http://www.tac.uiuc.edu/

Available Documentation   Program documentation and reference manuals can be purchased from the listed distribution source.

Available Training   BUILDER training and support is available to all military and civilian users through the UIUC Technical Assistance Center. Contact:
Scott McDonald, Phone: 217-373-4536; e-mail: techctr@uiuc.edu